FY 2009 Performance Plan Update

FY 2009 Performance Plan Update Narrative

The enclosed FY 2009 Performance Plan has been updated to reflect reprioritization of Agency Programs and projects as a result of the FY 2008 and FY 2009 Appropriations. The only program area that has changed performance commitments as a result of Congressional redirection is the Innovative Partnerships Program. The APGs eliminated from this program may be found at the end of this plan. This Performance Plan may be updated as a result of Recovery Act funds.

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Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings			
				FY 04	FY 05	FY 06	FY 07
Strategic Goal 1	**Fly the Shuttle as safely as possible until its retirement, not later than 2010.**						
Outcome 1.1	**Assure the safety and integrity of the Space Shuttle workforce, systems and processes, while flying the manifest.**			**Green**	**Green**	**Yellow**	**Green**
APG 9SSP1	Achieve zero Type-A (damage to property at least $1 million or death) or Type-B (damage to property at least $250 thousand or permanent disability or hospitalization of three or more persons) mishaps in FY 2009.	Space Shuttle	Space Shuttle Program				
APG 9SSP2	Complete 100% of all mission objectives for all Space Shuttle missions in FY 2009 as specified in the Flight Requirements Document for each mission.	Space Shuttle	Space Shuttle Program				
Outcome 1.2	**By December 31, 2010, retire the Space Shuttle.**			**None**	**None**	**None**	**Green**
APG 9SSP3	A 13 percent reduction in Space Shuttle annual value of Shuttle production contracts for Orbiter, External Tank, Solid Rocket Boosters, Reusable Solid Rocket Motor, Space Shuttle Main Engine and Launch & Landing, while maintaining safe flight.	Space Shuttle	Space Shuttle Program				
APG 9SSP4	Reduce to twenty the number of dedicated Space Shuttle Kennedy Space Center (blocks of) facilities, while maintaining safe flight.	Space Shuttle	Space Shuttle Program				
Strategic Goal 2	**Complete the International Space Station in a manner consistent with NASA's International Partner commitments and the needs of human exploration.**						
Outcome 2.1	**By 2010, complete assembly of the U.S. On-orbit Segment; launch International Partner elements and sparing items required to be launched by the Shuttle; and provide on-orbit resources for research to support U.S. human space exploration.**			**None**	**Green**	**Green**	**Green**
APG 9ISS1	Based on the actual Space Shuttle flight rate, number of remaining Shuttle flights, and the discussions with the International Partners, update the agreed-to ISS assembly sequence and transportation plan as necessary.	International Space Station	International Space Station Program				
APG 9ISS2	Accomplish a minimum of 90% of the on-orbit research objectives as established one month prior to a given increment.	International Space Station	International Space Station Program				

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
APG 9ISS3	Per the final configuration agreed to by the International Partners, fly the ISS elements and logistics baselined for FY 2009.	International Space Station	International Space Station Program				
APG 9ISS4	Provide increased ISS capability by assembling the remaining two Japanese Exploration Agency (JAXA) elements, the Exposed Facility (EF) and the Experiment Logistics Module-Exposed Section (ELM-ES), and the NASA EXPRESS Logistics Carriers (ELC) as baselined in FY 2009.	International Space Station	International Space Station Program				
Outcome 2.2	**By 2009, provide the on-orbit capability to support an ISS crew of six crewmembers.**			**None**	**None**	**None**	**Green**
APG 9ISS5	Install and make flight ready the following delivered ISS systems for 6 member crew capability in FY 2009: three crew quarters, Galley, Water Recovery System (WRS racks 1 and 2), second Treadmill with Vibration Isolation (TVIS2), and Waste Collection/Hygiene Compartment (WHC).	International Space Station	International Space Station Program				
APG 9ISS6	In concert with the International Partners, assure a continuous crew presence on the ISS.	International Space Station	International Space Station Program				
Outcome 2.3	**Conduct basic and applied biological and physical research to advance and sustain U.S. scientific expertise.**			**None**	**None**	**None**	**New**
APG 9AC1	Deliver 3 out of 4 of the following exploration technology payloads to SOMD for launch to the ISS: Multi-User Droplet Combustion Apparatus, Light Microscopy Module / Constrained Vapor Bubble, Boiling Experiment Facility (BXF), Space Acceleration Measurement System accelerometers for CIR, FIR and BXF.	Advanced Capabilities	Exploration Technology Development				
APG 9AC2	Complete the development of 3 out of 4 of the following non-exploration payloads: Investigating the Structure of Paramagnetic Aggregates from Colloidal Emulsions, Shear History Extensional Rheology Experiment, Advanced Plant Experiments on Orbit, Smoke Point in Coflow Experiment, Binary Critical Aggregation Test - 4.	Advanced Capabilities	Exploration Technology Development				
APG 9AC3	Complete the selection of investigators for the BION (Russian collaboration) flight.	Advanced Capabilities	Exploration Technology Development				
Strategic Goal 3	**Develop a balanced overall program of science, exploration, and aeronautics consistent with the redirection of the human spaceflight program to focus on exploration.**						
Sub Goal 3A.1	**Study Earth from space to advance scientific understanding and meet societal needs.**						
Outcome 3.1	**Progress in understanding and improving predictive capability for changes in the ozone layer, climate forcing, and air quality associated with changes in atmospheric composition.**			**Green**	**Green**	**Green**	**Green**
APG 9ES1	Demonstrate progress in understanding and improving predictive capability for changes in the ozone layer, climate forcing, and air quality associated with changes in atmospheric composition (based on measurements from	Earth Science	Multiple Programs				

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
	presently orbiting NASA and non-NASA assets). Progress will be evaluated by external expert review.						
APG 9ES2	Develop missions in support of this Outcome, as demonstrated by completing the Orbiting Carbon Observatory (OCO) Launch Readiness Review (LRR).	Earth Science	Earth System Science Pathfinder				
APG 9ES3	Develop missions in support of this Outcome, as demonstrated by completing the Glory mission Launch Readiness Review (LRR).	Earth Science	Earth Systematic Missions				
APG 9ES4	Develop missions in support of this Outcome, as demonstrated by completing the integration and testing of the Aquarius instrument for delivery to the CONAE (Argentina) satellite observatory.	Earth Science	Earth System Science Pathfinder				
APG 9ES5	Develop mission in support of this Outcome, as demonstrated by completing the CLARREO advanced concepts study.	Earth Science	Earth Systematic Missions				
APG 9ES6	Conduct flight program in support of this Outcome as demonstrated by achieving mission success criteria for Aqua and CALIPSO.	Earth Science	Multiple Programs				
Outcome 3.2	**Progress in enabling improved predictive capability for weather and extreme weather events.**			Green	Green	Green	Green
APG 9ES7	Demonstrate progress in enabling improved predictive capability for weather and extreme weather events. Progress will be evaluated by external expert review.	Earth Science	Multiple Programs				
APG 9ES8	Develop missions in support of this Outcome, as demonstrated by completing the Global Precipitation Mission (GPM) Confirmation Review.	Earth Science	Earth Systematic Missions				
APG 9ES9	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Aqua.	Earth Science	Earth Systematic Missions				
Outcome 3A.3	**Progress in quantifying global land cover change and terrestrial and marine productivity, and in improving carbon cycle and ecosystem models.**			**Green**	**Green**	**Green**	**Green**
APG 9ES10	Demonstrate progress in quantifying global land cover change and terrestrial and marine productivity, and in improving carbon cycle and ecosystem models. Progress will be evaluated by external expert review.	Earth Science	Multiple Programs				
APG 9ES11	Develop missions in support of this Outcome, as demonstrated by completing the Landsat Data Continuity Mission (LDCM) Critical Design Review (CDR).	Earth Science	Earth Systematic Missions				
APG 9ES12	Develop missions in support of this Outcome, as demonstrated by completing the DESDynI advanced concept study.	Earth Science	Earth Systematic Missions				
APG 9ES2	Develop missions in support of this Outcome, as demonstrated by completing the Orbiting Carbon Observatory (OCO) Launch Readiness Review (LRR).	Earth Science	Earth System Science Pathfinder				
APG 9ES9	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Aqua.	Earth Science	Earth Systematic Missions				

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
Outcome 3A.4	**Progress in quantifying the key reservoirs and fluxes in the global water cycle and in improving models of water cycle change and fresh water availability.**			**Green**	**Green**	**Yellow**	**Green**
APG 9 ES13	Demonstrate progress in quantifying the key reservoirs and fluxes in the global water cycle and in improving models of water cycle change and fresh water availability. Progress will be evaluated by external expert review.	Earth Science	Multiple Programs				
APG 9ES14	Develop missions in support of this Outcome, as demonstrated by completing the SMAP advanced concepts study.	Earth Science	Earth Systematic Missions				
APG 9ES8	Develop missions in support of this Outcome, as demonstrated by completing the Global Precipitation Mission (GPM) Confirmation Review.	Earth Science	Earth Systematic Missions				
APG 9ES9	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Aqua.	Earth Science	Earth Systematic Missions				
Outcome 3A.5	**Progress in understanding the role of oceans, atmosphere, and ice in the climate system and in improving predictive capability for its future evolution.**			**Green**	**Green**	**Yellow**	**Yellow**
APG 9ES15	Demonstrate progress in understanding the role of oceans, atmosphere, and ice in the climate system and in improving predictive capability for its future evolution. Progress will be evaluated by external expert review.	Earth Science	Multiple Programs				
APG 9ES16	Develop mission in support of this Outcome, as demonstrated by completing the ICESat II advanced concepts study.	Earth Science	Earth Systematic Missions				
APG 9ES2	Develop missions in support of this Outcome, as demonstrated by completing the Orbiting Carbon Observatory (OCO) Launch Readiness Review (LRR).	Earth Science	Earth System Science Pathfinder				
APG 9ES3	Develop missions in support of this Outcome, as demonstrated by completing the Glory mission Launch Readiness Review (LRR).	Earth Science	Earth Systematic Missions				
APG 9ES4	Develop missions in support of this Outcome, as demonstrated by completing the integration and testing of the Aquarius instrument for delivery to the CONAE (Argentina) satellite observatory.	Earth Science	Earth System Science Pathfinder				
APG 9ES6	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Aqua and CALIPSO.	Earth Science	Multiple Programs				
Outcome 3A.6	**Progress in characterizing and understanding Earth surface changes and variability of Earth's gravitational and magnetic fields.**			**None**	**Green**	**Green**	**Green**
APG 9ES11	Develop missions in support of this Outcome, as demonstrated by completing the Landsat Data Continuity Mission (LDCM) Critical Design Review (CDR).	Earth Science	Earth Systematic Missions				
APG 9ES12	Develop missions in support of this Outcome, as demonstrated by completing the DESDynI advanced concept study.	Earth Science	Earth Systematic Missions				
APG 9ES17	Demonstrate progress in characterizing and understanding Earth surface changes and variability of Earth's gravitational and magnetic fields. Progress will be evaluated by	Earth Science	Multiple Programs				

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
	external expert review.						
APG 9ES9	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Aqua.	Earth Science	Earth Systematic Missions				
Outcome 3A.7	**Progress in expanding and accelerating the realization of societal benefits from Earth system science.**			**Green**	**Green**	**Green**	**Green**
APG 9ES18	Issue twelve reports with partnering organizations that validate using NASA research capabilities (e.g., observations and/or forecast products) could improve their operational decision support systems.	Earth Science	Applied Sciences				
APG 9ES19	Increase the number of distinct users of NASA data and services.	Earth Science	Earth Science Research				
APG 9ES20	Maintain a high level of customer satisfaction, as measured by exceeding the most recently available federal government average rating of the Customer Satisfaction Index.	Earth Science	Earth Science Research				
Sub Goal 3B	**Understand the Sun and its effects on Earth and the solar system.**						
Outcome 3B.1	**Progress in understanding the fundamental physical processes of the space environment from the Sun to Earth, to other planets, and beyond to the interstellar medium.**			**Green**	**Green**	**Green**	**Green**
APG 9HE1	Demonstrate progress in understanding the fundamental physical processes of the space environment from the Sun to Earth, to other planets, and beyond to the interstellar medium. Progress will be evaluated by external expert review.	Heliophysics	Multiple Programs				
APG 9HE2	Develop missions in support of this Outcome, as demonstrated by completing the Magnetospheric Multiscale (MMS) Spacecraft Preliminary Design Review (PDR).	Heliophysics	Solar Terrestrial Probes				
APG 9HE3	Develop missions in support of this Outcome, as demonstrated by completing the Geospace Radiation Belt Storm Probes Confirmation Review.	Heliophysics	Living with a Star				
APG 9HE4	Develop missions in support of this Outcome, as demonstrated by completing the Explorer down-select.	Heliophysics	Heliophysics Explorer Program				
APG 9HE5	Conduct flight program in support of this outcome, as demonstrated by achieving mission success criteria for STEREO, AIM, THEMIS and IBEX.	Heliophysics	Multiple Programs				
Outcome 3B.2	**Progress in understanding how human society, technological systems, and the habitability of planets are affected by solar variability and planetary magnetic fields.**			**Green**	**Green**	**Green**	**Green**
APG 9HE2	Develop missions in support of this Outcome, as demonstrated by completing the Magnetospheric Multiscale (MMS) Spacecraft Preliminary Design Review (PDR).	Heliophysics	Solar Terrestrial Probes				
APG 9HE3	Develop missions in support of this Outcome, as demonstrated by completing the Geospace Radiation Belt Storm Probes Confirmation Review.	Heliophysics	Living with a Star				

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APG 9HE4	Develop missions in support of this Outcome, as demonstrated by completing the Explorer down-select.	Heliophysics	Heliophysics Explorer Program				
APG 9HE6	Demonstrate progress in understanding how human society, technological systems, and the habitability of planets are affected by solar variability and planetary magnetic fields. Progress will be evaluated by external expert review.	Heliophysics	Multiple Programs				
APG 9HE7	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for AIM and THEMIS.	Heliophysics	Multiple Programs				
Outcome 3B.3	**Progress in developing the capability to predict the extreme and dynamic conditions in space in order to maximize the safety and productivity of human and robotic explorers.**			**None**	**None**	**Green**	**Green**
APG 9HE3	Develop missions in support of this Outcome, as demonstrated by completing the Geospace Radiation Belt Storm Probes Confirmation Review.	Heliophysics	Living with a Star				
APG 9HE8	Demonstrate progress in developing the capability to predict the extreme and dynamic conditions in space in order to maximize the safety and productivity of human and robotic explorers. Progress will be evaluated by external expert review.	Heliophysics	Multiple Programs				
APG 9HE9	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for STEREO.	Heliophysics	Multiple Programs				
Sub Goal 3C	**Advance scientific knowledge of the origin and history of the solar system, the potential for life elsewhere, and the hazards and resources present as humans explore space.**						
Outcome 3C.1	**Progress in learning how the Sun's family of planets and minor bodies originated and evolved.**			**Green**	**Green**	**Green**	**Green**
APG 9PS1	Demonstrate progress in learning how the Sun's family of planets and minor bodies originated and evolved. Progress will be evaluated by external expert review.	Planetary Science	Multiple Programs				
APG 9PS2	Develop missions in support of this Outcome, as demonstrated by completing the Juno Critical Design Review (CDR).	Planetary Science	New Frontiers				
APG 9PS3	Develop missions in support of this Outcome, as demonstrated by completing the GRAIL mission Preliminary Design Review (PDR).	Planetary Science	Discovery				
APG 9PS4	Develop missions in support of this Outcome, as demonstrated by completing the Mars Science Laboratory (MSL) Launch Readiness Review (LRR).	Planetary Science	Mars Exploration				
Outcome 3C.2	**Progress in understanding the processes that determine the history and future of habitability in the solar system, including the origin and evolution of Earth's biosphere and the character and extent of prebiotic chemistry on Mars and other worlds.**			**Green**	**Green**	**Green**	**Green**

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APG 9PS2	Develop missions in support of this Outcome, as demonstrated by completing the Juno Critical Design Review (CDR).	Planetary Science	New Frontiers				
APG 9PS4	Develop missions in support of this Outcome, as demonstrated by completing the Mars Science Laboratory (MSL) Launch Readiness Review (LRR).	Planetary Science	Mars Exploration				
APG 9PS5	Demonstrate progress in understanding the processes that determine the history and future of habitability in the solar system, including the origin and evolution of Earth's biosphere and the character and extent of prebiotic chemistry on Mars and other worlds. Progress will be evaluated by external expert review.	Planetary Science	Multiple Programs				
APG 9PS6	Develop missions in support of this Outcome, as demonstrated by selecting the next Scout mission.	Planetary Science	Mars Exploration				
APG 9PS7	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Phoenix.	Planetary Science	Mars Exploration				
Outcome 3C.3	**Progress in identifying and investigating past or present habitable environments on Mars and other worlds, and determining if there is or ever has been life elsewhere in the solar system.**			**Green**	**Green**	**Green**	**Green**
APG 9PS2	Develop missions in support of this Outcome, as demonstrated by completing the Juno Critical Design Review (CDR).	Planetary Science	New Frontiers				
APG 9PS4	Develop missions in support of this Outcome, as demonstrated by completing the Mars Science Laboratory (MSL) Launch Readiness Review (LRR).	Planetary Science	Mars Exploration				
APG 9PS6	Develop missions in support of this Outcome, as demonstrated by selecting the next Scout mission.	Planetary Science	Mars Exploration				
APG 9PS7	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Phoenix.	Planetary Science	Mars Exploration				
APG 9PS8	Demonstrate progress in identifying and investigating past or present habitable environments on Mars and other worlds, and determining if there is or ever has been life elsewhere in the solar system. Progress will be evaluated by external expert review.	Planetary Science	Multiple Programs				
Outcome 3C.4	**Progress in exploring the space environment to discover potential hazards to humans and to search for resources that would enable human presence.**			**Green**	**Green**	**Green**	**Green**
APG 9PS10	Develop missions in support of this Outcome, as demonstrated by selecting instruments for the first Lunar Science Research mission.	Planetary Science	Planetary Science Research				
APG 9PS4	Develop missions in support of this Outcome, as demonstrated by completing the Mars Science Laboratory (MSL) Launch Readiness Review (LRR).	Planetary Science	Mars Exploration				
APG 9PS7	Conduct flight program in support of this Outcome, as demonstrated by achieving mission success criteria for Phoenix.	Planetary Science	Mars Exploration				

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
APG 9PS9	Demonstrate progress in exploring the space environment to discover potential hazards to humans and to search for resources that would enable human presence. Progress will be evaluated by external expert review.	Planetary Science	Multiple Programs				
Sub Goal 3D	**Discover the origin, structure, evolution, and destiny of the universe, and search for Earth-like planets.**						
Outcome 3D.1	**Progress in understanding the origin and destiny of the universe, phenomena near black holes, and the nature of gravity.**			**Green**	**Green**	**Green**	**Green**
APG 9AS1	Demonstrate progress in understanding the origin and destiny of the universe, phenomena near black holes, and the nature of gravity. Progress will be evaluated by external expert review.	Astrophysics	Multiple Programs				
APG 9AS2	Develop missions in support of this Outcome, as demonstrated by releasing the Joint Dark Energy Mission (JDEM) Announcement of Opportunity (AO).	Astrophysics	Physics of the Cosmos				
Outcome 3D.2	**Progress in understanding how the first stars and galaxies formed, and how they changed over time into the objects recognized in the present universe.**			**Blue**	**Green**	**Yellow**	**Green**
APG 9AS3	Demonstrate progress in understanding how the first stars and galaxies formed, and how they changed over time into the objects we recognize in the present universe. Progress will be evaluated by external expert review.	Astrophysics	Multiple Programs				
APG 9AS4	Develop missions in support of this Outcome, as demonstrated by completing the James Webb Space Telescope (JWST) Integrated Science Instrument Module (ISIM) Critical Design Review (CDR).	Astrophysics	Cosmic Origins				
APG 9AS5	Develop missions in support of this Outcome, as demonstrated by beginning Stratospheric Observatory for Infrared Astronomy (SOFIA) open-door testing.	Astrophysics	Cosmic Origins				
Outcome 3D.3	**Progress in understanding how individual stars form and how those processes ultimately affect the formation of planetary systems.**			**Green**	**Green**	**Yellow**	**Green**
APG 9AS4	Develop missions in support of this Outcome, as demonstrated by completing the James Webb Space Telescope (JWST) Integrated Science Instrument Module (ISIM) Critical Design Review (CDR).	Astrophysics	Cosmic Origins				
APG 9AS5	Develop missions in support of this Outcome, as demonstrated by beginning Stratospheric Observatory for Infrared Astronomy (SOFIA) open-door testing.	Astrophysics	Cosmic Origins				
APG 9AS6	Demonstrate progress in understanding how individual stars form and how those processes ultimately affect the formation of planetary systems. Progress will be evaluated by external expert review.	Astrophysics	Multiple Programs				
Outcome 3D.4	**Progress in creating a census of extra-solar planets and measuring their properties.**			**Green**	**Green**	**Yellow**	**Yellow**

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
APG 9AS7	Demonstrate progress in creating a census of extra-solar planets and measuring their properties. Progress will be evaluated by external expert review.	Astrophysics	Multiple Programs				
APG 9AS8	Develop missions in support of this Outcome, as demonstrated by completing Kepler Launch Readiness Review (LRR).	Astrophysics	Exoplanet Exploration				
Sub Goal 3E	**Advance knowledge in the fundamental disciplines of aeronautics, and develop technologies for safer aircraft and higher capacity airspace systems.**						
Outcome 3E.1	**By 2016, identify and develop tools, methods, and technologies for improving overall aircraft safety of new and legacy vehicles operating in the Next Generation Air Transportation System (projected for the year 2025).**			**None**	**None**	**Green**	**Green**
APG 9AT1	Demonstrate a 10% improvement in estimation accuracy of integrated gas path sensing and diagnostics for aircraft engine health.	Aeronautics	Aviation Safety				
APG 9AT2	Conduct a spin test to verify enhanced disk rim attachment strength at component level and show 10% life improvement over criteria established in 2007.	Aeronautics	Aviation Safety				
APG 9AT3	Assess and deliver findings on initial multi-modal presentation formats and interaction methods for uncertainty display concepts and virtual visual environments with statistically significant reductions in communication errors, mental workload, and flight technical error, as well as increases in usability and situation awareness compared with baseline capability.	Aeronautics	Aviation Safety				
APG 9AT4	Design and evaluate preliminary concepts in on-line integrity monitoring (99% failure detection with less than 1% false positives) for adaptive control systems through simulation tests.	Aeronautics	Aviation Safety				
Outcome 3E.2	**By 2016, develop and demonstrate future concepts, capabilities, and technologies that will enable major increases in air traffic management effectiveness, flexibility, and efficiency, while maintaining safety, to meet capacity and mobility requirements of the Next Generation Air Transportation System.**			**None**	**None**	**Green**	**Green**
APG 9AT5	Complete trajectory analysis for service provider-based automated separation assurance with time-based metering with 2-3 times increase in capacity without reduction of baseline metering accuracy or separation violations.	Aeronautics	Airspace Systems				
APG 9AT6	Develop algorithms to generate robust, optimized solutions for surface traffic planning and control. Evaluations will include benefits in both nominal and off-nominal conditions under increased Airportal traffic density and consider environmental constraints and aircraft operator schedule preferences.	Aeronautic	Airspace Systems				
Outcome 3E.3	**By 2016, develop multidisciplinary analysis and design tools and new technologies, enabling better vehicle performance (e.g., efficiency, environmental, civil**			**None**	**None**	**Green**	**Green**

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	competitiveness, productivity, and reliability) in multiple flight regimes and within a variety of transportation system architectures.						
APG 9AT10	Complete the CFD pretest predictions of performance and operability of a high Mach fan for a TBCC propulsion system and compare to fan test data from the GRC W8 facility.	Aeronautics	Fundamental Aeronautics				
APG 9AT7	Develop a database for alternative hydrocarbons using accepted testing standards, then characterize the fuels (freezing point, break point, etc) in comparison to current Jet-A.	Aeronautics	Fundamental Aeronautics				
APG 9AT8	Develop and validate transmission tools and technologies to support variable speed drive systems using data from several transmission test cells at GRC.	Aeronautics	Fundamental Aeronautics				
APG 9AT9	Demonstrate an adjoint-based design method for configuration shaping; also establish the capability to design and analyze supersonic vehicles that achieve efficiency improvements within 10% of the defined targets including engine plume effects and verify the results using wind tunnel and flight experiments.	Aeronautics	Fundamental Aeronautics				
Outcome 3E.4	**Ensure the continuous availability of a portfolio of NASA-owned wind tunnels/ground test facilities, which are strategically important to meeting national aerospace program goals and requirements.**			**None**	**None**	**None**	**Green**
APG 9AT11	To sustain the required aeronautics test facilities force measurement capability for the nation, implement a centralized force balance capability by FY 2009.	Aeronautics	Aeronautics Test Program				
Sub Goal 3F	**Understand the effects of the space environment on human performance, and test new technologies and countermeasures for long-duration human space exploration.**						
Outcome 3F.1	**By 2008, develop and test candidate countermeasures to ensure the health of humans traveling in space.**			**Green**	**Green**	**Green**	**Green**
APG 9AC4	Develop an operational protocol that meets the standards of the Office of the Chief Health and Medical Officer for a countermeasure to lower the risk of renal stone formation due to increased bone loss during long duration missions in microgravity to below 1%.	Advanced Capabilities	Human Research Program				
APG 9AC5	Validate a ground analog fractional-gravity test methodology to assess whether 1/6th g is protective of physiological systems, including bone loss, and if not, what countermeasures are needed.	Advanced Capabilities	Human Research Program				
APG 9AC6	Provide recommendations for optimized EVA suit weight, pressure, center of gravity and kinematics.	Advanced Capabilities	Human Research Program				
Outcome 3F.2	**By 2010, identify and test technologies to reduce total mission resource requirements for life support systems.**			**Green**	**Green**	**Green**	**Green**
APG 9AC7	Evaluate three alternative distillation technologies for primary water processing as part of closed loop water recovery systems.	Advanced Capabilities	Exploration Technology Development				

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Outcome 3F.3	**By 2010, develop reliable spacecraft technologies for advanced environmental monitoring and control and fire safety.**			**Green**	**None**	**Green**	**Green**
APG 9AC8	Complete the System Design Review for the Colorimetric Solid Phase Extraction Water Biocide Monitor.	Advanced Capabilities	Exploration Technology Development				
Outcome 3F.4	**By 2012, identify and develop tools, methods, and technologies for assessing, improving and maintaining the overall health of the astronaut corps, for mission lengths up to 180 days in microgravity or 1/6 G.**						
APG 9SFS1	Publish volume 5 of the Spacecraft Maximum Allowable Concentrations (SMACs) and volume 3 of the Spacecraft Water Exposure Guidelines (SWEGs).	Space and Flight Support (SFS)	Crew Health & Safety				
APG 9SFS2	Thirty-seven percent of current and former astronaut medical requirements data will be captured in a comprehensive medical data management infrastructure.	Space and Flight Support (SFS)	Crew Health & Safety				
APG 9SFS3	Capture 100% of medical and environmental data required by Medical Operations in queriable form.	Space and Flight Support (SFS)	Crew Health & Safety				
Strategic Goal 4	**Bring a new Crew Exploration Vehicle into service as soon as possible after Shuttle retirement.**						
Outcome 4.1	**No later than 2015, and as early as 2010, transport three crewmembers to the International Space Station and return them safely to Earth, demonstrating an operational capability to support human exploration missions.**			**Green**	**Green**	**Green**	**Yellow**
APG 9AC11	Deliver a prototype 5-meter diameter ablative heat shield for Orion to the Constellation Systems Program.	Advanced Capabilities	Exploration Technology Development				
APG 9CS1	Complete the Critical Design Review (CDR) for the Orion / Crew Exploration Vehicle (CEV).	Constellation Systems	Constellation Systems Program				
APG 9CS12	Complete the Preliminary Design Review (PDR) for the Constellation Program flight capability (PDR #1).	Constellation Systems	Constellation Systems Program				
APG 9CS2	Complete the Critical Design Review (CDR) for the Ares I Upper Stage (US) element.	Constellation Systems	Constellation Systems Program				
APG 9CS3	Complete the Critical Design Review (CDR) for the Pad B Launch Complex development within the Ground Operations Project.	Constellation Systems	Constellation Systems Program				
APG 9CS4	Complete the Preliminary Design Review (PDR) of the Mission Control Center System (MCCS) within the Mission Operations Project.	Constellation Systems	Constellation Systems Program				
APG 9CS5	Complete the Preliminary Design Review (PDR) for the Extravehicular Activity (EVA) Space Suit Element for CEV.	Constellation Systems	Constellation Systems Program				
APG 9CS6	Complete the launch and flight analysis of the CEV Pad Abort 1 (PA-1) test.	Constellation Systems	Constellation Systems Program				

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
APG 9CS7	Complete the launch and flight analysis of the Ares 1-X sub-orbital test.	Constellation Systems	Constellation Systems Program				
APG 9SFS3	In FY 2009, maintain agency rocket propulsion test core competencies (both infrastructure and critical skills) at appropriate levels to meet Constellation testing requirements and integrate these with other NASA programs, commercial partners, and DoD requirements and capabilities.	Space and Flight Support (SFS)	Rocket Propulsion Testing				
APG 9SFS4	Coordinate rocket propulsion test activities to support Constellation rocket propulsion testing milestones by providing an agency level Rocket Propulsion Test Plan.	Space and Flight Support (SFS)	Rocket Propulsion Testing				
Outcome 4.2	**By 2010, successfully transition applicable Shuttle components, infrastructure, and workforce to the Constellation Systems program.**						**New**
APG 9CS8	Demonstrate progress towards the transition of Space Shuttle and Space Station workforce and infrastructure for utilization in Constellation, including the transfer of the Vertical Assembly Building, configuration of Launch Complex 39-B and the Mobile Launch Platform 1 for the Ares 1-X test.	Constellation Systems	Constellation Systems Program				
Strategic Goal 5	**Encourage the pursuit of appropriate partnerships with the emerging commercial space sector.**						
Outcome 5.1	**Develop and demonstrate a means for NASA to purchase launch services from emerging launch providers.**			**Green**	**Green**	**Green**	**Green**
APG 9SFS5	Establish a contractual mechanism or agreement to provide technical exchanges between NASA's Launch Services Program and emerging launch vehicles/providers to enhance early launch success.	Space and Flight Support (SFS)	Launch Services				
Outcome 5.2	**By 2010, demonstrate one or more commercial space services for ISS cargo and/or crew transport.**			**Green**	**Green**	**Green**	**Green**
APG 9CS10	Have at least three funded and unfunded Partners receiving technical assistance through the COTS Assistance Team (CAT) and making progress toward orbital demonstrations of commercial crew and cargo systems.	Constellation Systems	Constellation Systems Program				
APG 9CS9	Have at least one Partner complete a minimum of one orbital demonstration flight in FY 2009.	Constellation Systems	Constellation Systems Program				
Strategic Goal 6	**Establish a lunar return program having the maximum possible utility for later missions to Mars and other destinations.**						
Outcome 6.1	**By 2008, launch a Lunar Reconnaissance Orbiter (LRO) that will provide information about potential human exploration sites.**			**Green**	**None**	**Green**	**Green**
APG 9AC12	Launch the Lunar Reconnaissance Orbiter. (LRO)	Advanced Capabilities	Lunar Precursor Robotic Program				
APG 9AC13	Launch the Lunar Crater Observation and Sensing Satellite. (LCROSS)	Advanced Capabilities	Lunar Precursor Robotic Program				

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Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
Outcome 6.2	**By 2012, develop and test technologies for in situ resource utilization, power generation, and autonomous systems that reduce consumables launched from Earth and moderate mission risk.**			**Green**	**Green**	**Green**	**Green**
APG 9AC14	Demonstrate in field tests a proof-of-concept pressurized rover with EVA suitports that could enable surface exploration beyond the vicinity of the lunar outpost and improve EVA work efficiency.	Advanced Capabilities	Exploration Technology Development				
Outcome 6.3	**By 2013, sufficiently develop and test technologies for nuclear power systems to enable an informed selection of systems for flight development to provide power to a lunar outpost.**			**Green**	**White**	**Green**	**Green**
APG 9AC15	Demonstrate full-scale radiator panels in the laboratory at temperatures and heat transfer rates relevant to the reference 40-kilowatt fission surface power system for the lunar outpost.	Advanced Capabilities	Exploration Technology Development				
Outcome 6.4	**Implement the space communications and navigation architecture responsive to science and exploration mission requirements.**			**Green**	**Green**	**Green**	**Green**
APG 9SFS6	Complete TDRS Replenishment Preliminary Design Review (PDR).	Space and Flight Support (SFS)	Space Communications and Navigation				
APG 9SFS7	Re-compete the Space Network, Near Earth Network and NISN operations and maintenance contracts to provide uninterrupted support of those networks.	Space and Flight Support (SFS)	Space Communications and Navigation				
APG 9SFS8	Complete a consolidated network modernization plan for all SCaN networks to meet existing and future science and exploration mission requirements.	Space and Flight Support (SFS)	Space Communications and Navigation				
Outcome 6.5	**No later than 2020, demonstrate the capability to conduct an extended human expedition to the lunar surface and lay the foundation for extending human presence across the solar system.**						**None**
APG 9AC16	Begin successful science data collection from the Lunar Reconnaissance Orbiter (LRO) in support of human lunar missions.	Advanced Capabilities	Lunar Precursor Robotic Program				
APG 9AC17	Begin successful science data collection from the Lunar Crater Observation and Sensing Satellite (LCROSS) in support of human lunar missions.	Advanced Capabilities	Lunar Precursor Robotic Program				
APG 9CS11	Conduct the Lunar Capabilities SRR to define the lunar mission architecture transportation requirements.	Constellation Systems	Extended Lunar Stay Capability				

Cross-Agency Support Programs

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
Center Management and Operations Theme							
Outcome CMO-1	**Under development for release in 2010.**						**New**
APG 9CMO1	Under development for release in 2010.						
Education Theme							
Outcome ED-1	**Contribute to the development of the Science, Technology, Engineering and Math (STEM) workforce in disciplines needed to achieve NASA's strategic goals, through a portfolio of investments.**			**None**	**Green**	**Green**	**Green**
APG 9ED1	Support the development of 60 new or revised courses targeted at the STEM skills needed by NASA.	Education					
APG 9ED2	Serve 132 institutions in designated EPSCoR states.	Education					
APG 9ED3	Engage 8,500 underrepresented and underserved students in NASA higher education programs.	Education					
APG 9ED4	Increase the percentage of higher education program participants who have participated in NASA elementary or secondary programs by an additional ten percent above the FY 2007 baseline of eighteen percent.	Education					
APG 9ED5	Achieve thirty five percent of student participants in FY 2009 NASA higher education programs, will be employed by NASA, aerospace contractors, universities, and other educational institutions.	Education					
APG 9ED6	Achieve thirty five percent of undergraduate students in FY 2009 NASA higher education programs move on to advanced education in NASA-related disciplines.	Education					
Outcome ED-2	**Attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers and faculty.**			**None**	**Green**	**None**	**Green**
APG 9ED10	Achieve fifty percent or greater level of interest in science and technology careers among elementary and secondary students participating in NASA education programs.	Education					
APG 9ED7	Increase the percentage of elementary and secondary educators, who receive NASA content-based STEM resources materials or participate in short-duration activities that use these materials in the classroom by four percent above the FY 2007 baseline of fifty five percent.	Education					
APG 9ED8	Increase the number of elementary and secondary student participants in NASA instructional and enrichment activities by 10% above the FY 2007 baseline of 408,774.	Education					
APG 9ED9	Assure seventy percent of elementary and secondary educators who participate in NASA training programs use NASA resources in their	Education					

Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
	classroom instruction, an increase in the FY 2007 baseline of sixty two percent.						
Outcome ED-3	**Build strategic partnerships and linkages between STEM formal and informal education providers that promote STEM literacy and awareness of NASA's mission.**			**None**	**None**	**None**	**Green**
APG 9ED11	Assure that at least 350 museums and science centers across the country actively engage the public through NASA content.	Education					
APG 9ED12	Assure that twenty percent of the 460 museums and science centers that participate in NASA networks, use NASA resources in programs and exhibits.	Education					
Agency Management and Operations Theme							
Outcome IEM-1	**By 2012, implement Agency business systems that provide timely, consistent and reliable business information for management decisions.**			**None**	**None**	**None**	**Green**
APG 9IEM1	Implement all reports into the Human Capital Information Environment and stabilize the project and environment.	Agency Management and Operations	Agency IT Services				
APG 9IEM2	Implement the federal eTravel initiative to provide a standardized, comprehensive tool to support online booking, travel planning, travel expense reimbursement, payment processing, credit card reconciliation, and management reporting for NASA.	Agency Management and Operations	Agency IT Services				
Outcome IEM-2	**Increase efficiency by implementing new business systems and reengineering Agency business processes.**			**None**	**None**	**Green**	**Green**
APG 9IEM3	Reduce the number of quarterly corrective adjustments to financial statements from the 2006 baseline of 5948 steps to the 2009 goal of 2509 steps (a 58% reduction).	Agency Management and Operation	Agency IT Services				
APG 9IEM4	Improve the timeliness of the funds distribution process (time from receipt of apportionment to distribution of funds to Centers) from 65 days to the 2009 goal of 12 days.	Agency Management and Operations	Agency IT Services				
APG 9IEM5	Achieve cost savings, expected to increase annually with a 2009 goal of $19.3M, resulting from the integration of financial and asset management systems, a reduction in the number of redundant property, plant and equipment (PP&E) systems and process improvements that enable NASA to better manage PP&E assets.	Agency Management and Operations	Agency IT Services				
Outcome IPP-1	**Promote and develop innovative technology partnerships among NASA, U.S. industry, and other sectors for the benefit of Agency programs and projects.**			**Blue**	**Green**	**Green**	**Green**
APG 9IPP1	Develop twelve technology-related significant partnerships that create value for NASA's programs and projects. Track both quantitative dollar value and qualitative benefits to NASA (e.g. reduced volume or mass, improved safety).	Agency Management and Operations	Innovative Partnerships Program				

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Measure	Description	Contributing Theme	Contributing Program(s)	Multi-year Outcome ratings FY 04	FY 05	FY 06	FY 07
APG 9IPP2	Complete thirty technology transfer agreements with the commercial and academic community through such mechanisms as licenses, software use agreements, facility use agreements, and Space Act Agreements.	Agency Management and Operations	Innovative Partnerships Program				
APG 9IPP3	Fully implement a new system for managing NASA's technology transfer and partnership information, that is more user friendly and less costly than the current NASA Technology Transfer System (NTTS).	Agency Management and Operations	Innovative Partnerships Program				
APG 9IPP4	Infuse technologies from the IPP portfolio into NASA's programs and projects, with at least twelve documented infusion successes.	Agency Management and Operations	Innovative Partnerships Program				
Outcome SC-1	**Establish and maintain selected Agency level shared capabilities, across multiple classes of assets (e.g., wind tunnels, vacuum chambers, etc.), to ensure that they will continue to be available to support the missions that require them.**			**None**	**None**	**None**	**Green**
APG 9SC1	Prioritize funding requirements and select classes of assets for inclusion in the Shared Capability Assets Program.	Agency Management and Operations	Strategic Capabilities Assets Program				
APG 9SC2	Identify re-investment/re-capitalization opportunities within and among classes of assets and execute the approved changes (e.g., reallocate funds, upgrade facilities, etc.).	Agency Management and Operations	Strategic Capabilities Assets Program				
SPG 9SC3	Assets identified in FY 2008 that no longer have requirements for use by NASA will be dispositioned (decision made on whether to place on standby, be mothballed, be demolished, etc.).	Agency Management and Operations	Strategic Capabilities Assets Program				
Institutional Investments Theme							
Outcome IINV-1	**Under development for release in 2010.**						**New**
APG 9IINV1	Under development for release in 2010.						

Uniform and Efficiency Measures

Measure	Description
Advanced Capabilities Theme	
APG 9AC18	Complete all development projects within 110% of the cost and schedule baseline.
APG 9AC19	Increase the amount of research beam time for space radiation experiments at NSRL, hence science data collection, by reducing the non-science overhead to 25% from 33% for set up, tuning and maintenance.
APG 9AC20	Given an annual constant dollar technology funding, demonstrate improvements in the EVA Work Efficiency Index for humans and robots working cooperatively to deploy the power system infrastructure for the lunar outpost. Work Efficiency Index = (Time to complete a task using humans and robots) / (Time to complete a task using humans only).
Astrophysics Theme	
APG 9AS12	Complete all development projects within 110% of the cost and schedule baseline.
APG 9AS13	Deliver at least 90% of scheduled operating hours for all operations and research facilities.
APG 9AS14	Peer-review and competitively award at least 95%, by budget, of research projects.
APG 9AS15	Reduce time within which 80% of NRA research grants are awarded, from proposal due date to selection, by 5% per year, with a goal of 130 days.
Aeronautics Theme	
APG 9AT12	Deliver at least 94% of "on-time availability" for all operations and research facilities.
Constellation Systems Theme	
APG 9CS12	Complete all development projects within 110% of the cost and schedule baseline.
APG 9CS13	Reduction in ground operations cost (through 2012) of the Constellation Systems based on comparison with the Space Shuttle Program.
Education Theme	
APG 9ED13	Reduce the dollar invested per number of people reached via e-education technologies from FY 2008 amounts.
APG 9ES14	Reduce the cost per K-12 program participant over FY 2007 amounts by 1%.
Earth Science Theme	
APG 9ES21	Complete all development projects within 110% of the cost and schedule baseline.
APG 9ES22	Deliver at least 90% of scheduled operating hours for all operations and research facilities.
APG 9ES23	Peer-review and competitively award at least 90%, by budget, of research projects.
APG 9ES24	Reduce time within which eighty percent of NRA research grants are awarded, from proposal due date to selection, by five percent per year, with a goal of 130 days.

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Uniform and Efficiency Measures

Measure	Description
Heliophysics Theme	
APG 9HE10	Complete all development projects within 110% of the cost and schedule baseline.
APG 9HE11	Deliver at least 90% of scheduled operating hours for all operations and research facilities.
APG 9HE12	Peer-review and competitively award at least 95%, by budget, of research projects.
APG 9HE13	Reduce time within which eighty percent of NRA research grants are awarded, from proposal due date to selection, by five percent per year, with a goal of 130 days.
Agency Management and Operations Theme	
APG 9IEM8	Complete all development projects within 110% of the cost and schedule baseline.
APG 9IEM9	Reduce the number of financial processing steps/time to perform year end closing from the 2005 baseline of 120 steps to the 2008 goal of 20 steps (an 83% reduction).
APG 9IPP7	For technology partnerships, leverage IPP funding by bringing at least an additional $1.80 (one dollar and eighty cents) for each $1 (one dollar) of IPP funds.
International Space Station Theme	
APG 9ISS7	Achieve an Annual Cost Performance Index (CPI), the ratio of the value of the work accomplished versus the actual cost of the work accomplished, of greater than or equal to one.
APG 9ISS8	Deliver at least 90% of scheduled operating hours for all operations and research facilities.
Planetary Science Theme	
APG 9PS11	Complete all development projects within 110% of the cost and schedule baseline.
APG 9PS12	Deliver at least 90% of scheduled operating hours for all operations and research facilities.
APG 9PS13	Peer-review and competitively award at least 95%, by budget, of research projects.
APG 9PS14	Reduce time within which eighty percent of NRA research grants are awarded, from proposal due date to selection, by five percent per year, with a goal of 130 days.
Space and Flight Support (SFS) Theme	
APG 9SFS10	Achieve at least 99% Space Network proficiency for delivery of Space Communications services.
APG 9SFS11	Complete all development projects within 110% of the cost and schedule baseline.
APG 9SFS12	Ratio of Launch Services program cost per mission to average spacecraft cost, reduced to 6.3 percent.
Space Shuttle Theme	
APG 9SSP5	Annually reduce the Space Shuttle sustaining engineering workforce for flight hardware and software, while maintaining safe flight.
APG 9SSP6	Deliver at least 90% of scheduled operating hours for all operations and research facilities.

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Annual Performance Goals Eliminated for FY 2009

Measures	Description	Contributing Theme	Contributing Program(s)
APG 9IPP05	Demonstrate the purchase of services from the emerging commercial space sector for microgravity research and training.	Agency Management and Operations	Agency Management and Operations
APG 9IPP06	Demonstrate benefits of prize competitions by awarding at least one prize and communicating the resulting technology advancements.	Agency Management and Operations	Agency Management and Operations